



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department
of Community Health



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New updates in this issue:

- **Michigan Surveillance:** CDC identifies an influenza A/H1N1 virus from Michigan as resistant to oseltamivir; MDCH talking points regarding this topic are available in this report and online.
- **National Surveillance:** A recent MMWR article and CDC's weekly influenza report provide updated information regarding influenza A/H1N1 oseltamivir resistance in the U.S.
- **Avian Influenza:** Human avian influenza H5N1 cases reported by Egypt and Cambodia.

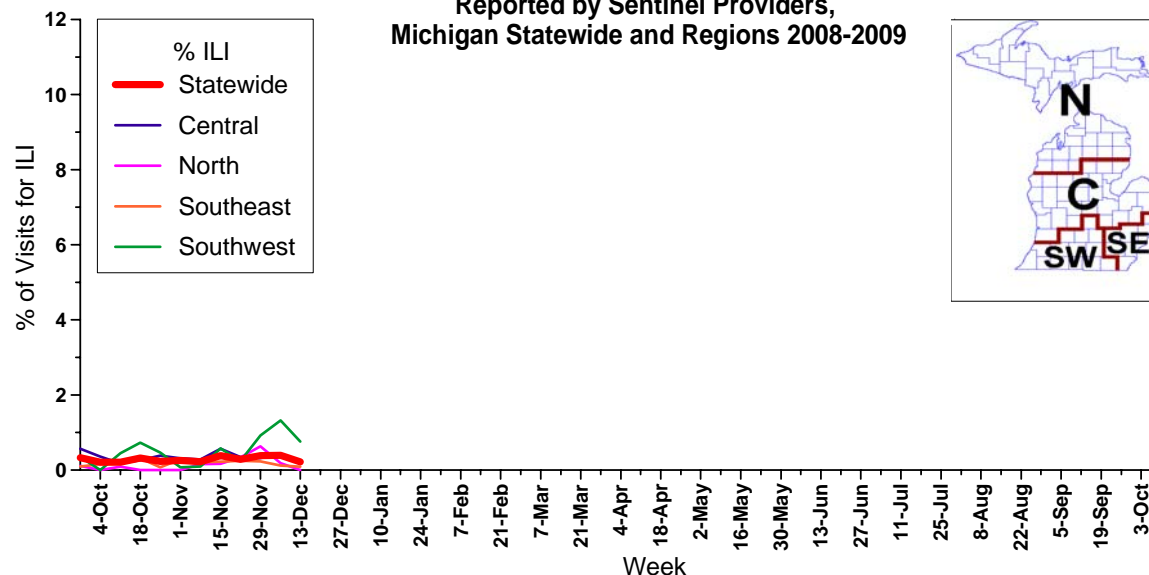
Michigan Disease Surveillance System: The week ending December 13 saw individual influenza disease reports increase slightly, while aggregate flu-like numbers held close to what was seen last week. Both numbers are consistent with levels seen at this time last year.

Emergency Department Surveillance: Emergency department visits from constitutional complaints held steady near last week's numbers, while respiratory complaints dropped slightly. These numbers are consistent with those seen this time last year. Two constitutional alerts in the SE(2) Influenza Surveillance Region and two respiratory alerts in the C(1) and N(1) Influenza Surveillance Regions were generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were mixed last week. Chest rub sales saw a very slight decrease in sales last week, while cough and cold medicines held steady near the previous week's numbers. The remainder of the indicators increased slightly. Indicator levels are comparable to those seen at this time last year.

Sentinel Provider Surveillance (as of December 18): During the week ending December 13, 2008, the proportion of visits due to influenza-like illness (ILI) remained unchanged at 0.2% overall; 17 patient visits due to ILI were reported out of 7,827 office visits. This level of ILI activity is slightly below that reported at this time during prior years' surveillance. Activity remains low in three of the four surveillance regions: North (0.2%), Central (0.0%), Southeast (0.1%), and Southwest (0.8%). Twenty-seven sentinels provided data for this report. Note that these rates may change as additional reports are received.

Percentage of Visits for Influenza-like Illness (ILI)
Reported by Sentinel Providers,
Michigan Statewide and Regions 2008-2009



As part of pandemic influenza preparedness, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Rachel Potter at 517-335-9710 or potterr1@michigan.gov for more information.

Laboratory Surveillance (as of December 18): One new influenza A/H1N1 isolate was identified at the MDCH Bureau of Laboratories (BOL) during the past week. For the 2008-2009 influenza season, MDCH BOL has identified four influenza isolates (followed by Influenza Surveillance Regions of origin):

- 3 A/H1N1 (3 SE, 1 SW)
- 1 B/Florida/4/2006-like (1 SE). B/Florida/4/2006-like matches the influenza B component of this season's Northern Hemisphere influenza vaccine.

During the past week, sporadic levels of influenza A and B were reported by sentinel laboratories in the SE Influenza Surveillance Region. Sporadic but increasing levels of positive RSV tests are also being reported statewide.

***As a reminder, the positive predictive value of influenza rapid tests decreases during times of low influenza prevalence. MDCH suggests that during periods of low influenza activity in your community, all positive rapid tests results be confirmed by sending in a specimen for viral culture; this can be arranged through your local health department.

Michigan Antiviral Resistance Data: One influenza A (H1N1) virus from the MDCH Bureau of Laboratories has been tested for antiviral resistance at CDC for the 2008-2009 influenza season. This virus was resistant to oseltamivir (Tamiflu®) and sensitive to zanamivir, amantadine and rimantadine. This case was a child from Oakland County who was seen on an outpatient basis and has recovered.

It is difficult to draw any conclusions about antiviral resistance in Michigan influenza viruses at this time, because it is early in the season and there have been very few positive specimens on which to perform additional testing. Antiviral resistance testing often takes several weeks to months to complete, and thus cannot be used to guide treatment of individual patients. At this time, CDC is not making any changes to the current recommendations for antiviral drug use for influenza infection. Therefore, the use of oseltamivir and zanamivir for the treatment of influenza is still recommended at this time.

Talking points regarding antiviral resistance in influenza A (H1N1) viruses are available online at http://www.michigan.gov/documents/mdch/Talking_Points_H1N1_resistance_12122008_259770_7.pdf.

Influenza-Associated Pediatric Mortality (as of December 18): No influenza-associated pediatric mortalities have been reported to MDCH for the 2008-2009 influenza season.

***The CDC has asked all states to collect information on any pediatric death associated with influenza infection. This includes not only any death in a child (<18 years) resulting from a compatible illness confirmed to be influenza by an appropriate diagnostic test, but also any unexplained death with evidence of an infectious process in a child. Please immediately call MDCH to ensure that proper clinical specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Congregate Settings Outbreaks (as of December 18): During the past week, one nursing home outbreak in the Central Surveillance Region due to influenza A was reported to MDCH. Confirmatory testing for this outbreak is underway at MDCH BOL. One congregated setting outbreak due to influenza has been reported to MDCH for the 2008-2009 influenza season.

National (CDC [edited], December 12): During week 49 (November 30-December 6, 2008), a low level of influenza activity was reported in the United States. Seventy-two (2.8%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. The proportion of outpatient visits for influenza-like illness (ILI) was below national and region-specific baseline levels. Three states reported local influenza activity; the District of Columbia, Puerto Rico and 24 states reported sporadic influenza activity; and 23 states reported no influenza activity.

Antiviral Resistance:

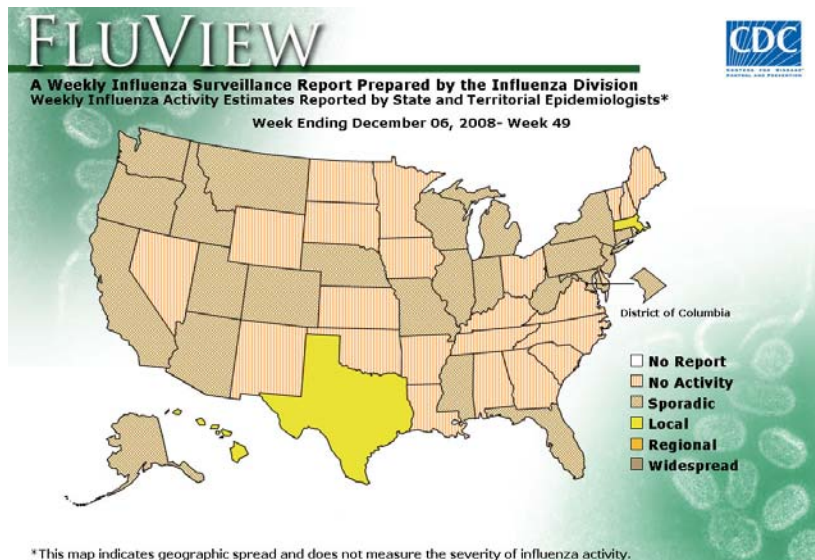
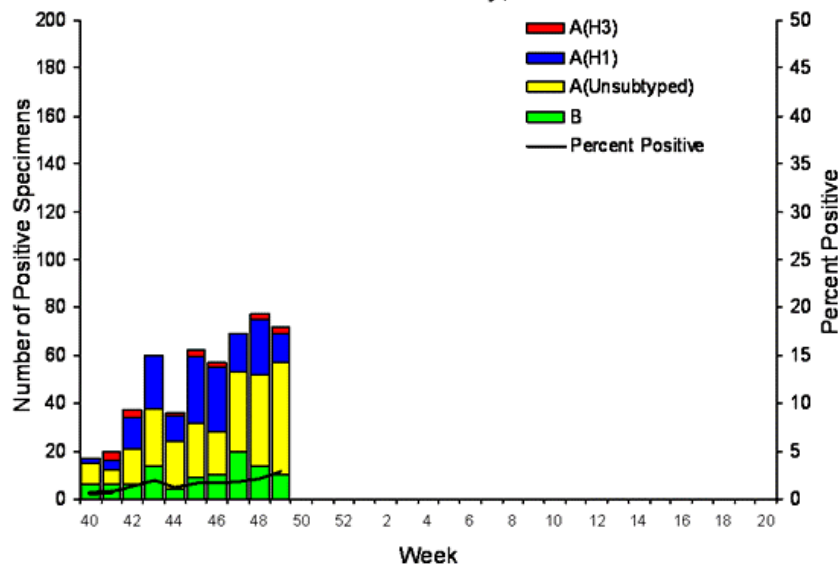
Since October 1, 2008, 46 influenza A (H1N1), seven influenza A (H3N2), and 15 influenza B viruses from 15 states have been tested for antiviral resistance; however, 63% of the viruses tested were from only two states. Forty-five of 46 influenza A (H1N1) viruses tested were resistant to oseltamivir; while all 46 viruses were sensitive to zanamivir. All influenza A (H3N2) and B viruses tested were sensitive to oseltamivir and zanamivir.

Twenty-five influenza A (H1N1) and five influenza A (H3N2) viruses were tested for adamantane resistance. All influenza A (H1N1) viruses were sensitive to the adamantanes. All influenza A (H3N2) viruses tested were resistant to the adamantanes. The adamantanes are not effective against influenza B viruses.

Three states have reported local influenza activity during the 2008-09 season in the United States to date, thus the number of virus specimens available for antiviral resistance testing is limited in both the overall number tested and in the number of states that have submitted specimens. Limited data on antiviral resistance, as well as the uncertainty regarding which influenza virus types or subtypes will circulate during the season, make it too early to make an accurate determination of the prevalence of influenza viruses resistance to oseltamivir or the adamantanes (amantadine and rimantadine) nationally or regionally at this time. CDC has solicited a representative sample of viruses from WHO collaborating laboratories in the United States, and more specimens are expected as influenza activity increases.

To access the entire CDC weekly surveillance report throughout the influenza season, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



National (MMWR, December 12): CDC issued an MMWR article "Update: Influenza Activity --- United States, September 28--November 29, 2008," which includes data on nationwide influenza surveillance, antigenic characterization, antiviral resistance, novel influenza infections, outpatient surveillance, pneumonia and influenza mortality, and pediatric hospitalizations and deaths. This update is available online at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5749a3.htm?s_cid=mm5749a3_e.

International (WHO, December 8): During the weeks 47-48, the level of overall influenza activity in the world remained low with sporadic activity observed in some countries.

Between weeks 47-48 sporadic influenza activity was detected in Belarus (A,B), Cameroon (H1, B), Canada (A,B), China (H1, H3, B), China Hong Kong Special Administrative Region (H1,H3,B), Denmark (H3), France (A), Germany (H1,H3), the Islamic Republic of Iran (H3), Italy (H3), Japan (H1, H3, B), Kenya (A, B), Latvia (A), Norway (H1, H3), Portugal (A, H3), Russian Federation (H1, H3,B), Spain (H3), Sweden (A,B), Switzerland (A), the United Kingdom of Great Britain and Northern Ireland (H3, H1, B) and the United States of America (H1,H3,B).

Argentina, Estonia, Finland, Mexico, the Netherlands, Poland, Romania and Slovenia reported no influenza activity.

MDCH reported **SPORADIC INFLUENZA ACTIVITY** to the CDC for the week ending Dec. 13, 2008.

For stakeholders interested in additional information regarding influenza vaccination and education, the MDCH publication *Michigan FluBytes* is available online at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html. *FluBytes* is published weekly during the influenza season.

End of Seasonal Report

Avian Influenza Activity

WHO Pandemic Phase: Phase 3 - Human infection(s) with a new subtype, but no human-to-human spread or rare instances of spread to a close contact.

International, Human (WHO, December 12): The Ministry of Health of Cambodia has announced a new confirmed case of human infection with the H5N1 avian influenza virus.

The 19-year-old male, from Kandal Province, developed symptoms on 28 November and initially sought medical attention at a local health centre on 30 November. The presence of the H5N1 virus was confirmed by the National Influenza Centre, the Institut Pasteur in Cambodia, on 11 December. The patient is currently hospitalised and a team led by the Ministry of Health is conducting field investigations into the source of his infection. Contacts of the case are also being identified and provided with prophylaxis.

Of the 8 cases confirmed to date in Cambodia, 7 have been fatal.

International, Human (WHO, December 16): The Ministry of Health and Population of Egypt has announced a new human case of avian influenza A(H5N1) virus infection. The case is a 16-year-old female from Assuit Governorate, Upper Egypt whose symptoms began on 8 December 2008. She was initially hospitalized at the district hospital on 11 December and then transferred to the Assuit University Hospital on 13 December where she died on 15 December. Infection with the H5N1 avian influenza virus was diagnosed by PCR at the Egyptian Central Public Health Laboratory and subsequently confirmed by the US Naval Medical Research Unit No. 3 (NAMRU-3) laboratories on 15 December 2008. Investigations into the source of her infection indicate a recent history of contact with sick and dead poultry.

Of the 51 cases confirmed to date in Egypt, 23 have been fatal.

International, Poultry (Wall Street Journal, December 14): A lethal strain of avian influenza has resurfaced in Hong Kong, India, Indonesia and Cambodia, raising the threat to humans as the traditional winter flu season approaches.

Government workers destroyed poultry at a Hong Kong farm Tuesday after dead chickens -- including some vaccinated birds -- tested positive for bird flu.

Authorities in India's northeastern Assam state said they will cull 200,000 chickens after a fresh outbreak there of the bird flu strain known as H5N1. Hong Kong is coping with the first appearance of H5N1 on its poultry farms in more than five years. On Tuesday, it quarantined a chicken farm and culled 80,000 birds.

In Indonesia, the World Health Organization confirmed two new cases of human bird flu on Tuesday, while in Cambodia, a 19-year-old has been confirmed with the virus, the country's first human case in more than 18 months, the World Health Organization and Cambodian government said.

Bird flu remains a threat primarily to poultry, not humans, among whom it is poorly transmitted. Since a peak in 2006, the number of confirmed human cases of H5N1 bird flu reported to the WHO has tapered off, with 38 cases this year -- the majority in Indonesia -- leading to 29 deaths. That's a tiny fraction of the number of deaths each year from regular influenza.

A threat remains in the strain's potential to mutate into a truly human disease that health authorities warn could kill tens of millions.

Hong Kong's chicken deaths included vaccinated birds, suggesting that the vaccine used for the past six years may have lost its effectiveness. Hong Kong officials say smugglers of infected fertilized eggs from mainland China may have penetrated the city's defenses.

Yi Guan, a professor of microbiology at Hong Kong University, notes the current strain of H5N1 virus has persisted since 1996, making it the longest-lasting potential human-influenza virus compared with the two-dozen human influenza outbreaks over the past century. He added the recent spate of cases across the region may not be completely isolated and would likely get worse as winter sets in, when the risks of influenza tend to peak.

Several human vaccines for bird flu, including one made by Sanofi-Aventis SA and another by GlaxoSmithKline PLC, have been developed, but their effectiveness is still untested. Developing and producing a more-precise vaccine that targets a particular bird-flu strain more lethal to humans could take more than six months.

International, Poultry (Reuters India, December 16): Eastern China's Jiangsu province has culled 377,000 poultry after laying hens tested positive for the H5N1 bird flu virus, the Ministry of Agriculture said on Tuesday, in the first reported case since the early summer.

Experts fear that the H5N1 virus, which can be contacted by humans, could spark a pandemic if it mutates to the extent that it can be transmitted easily among people.

The ministry said the virus, of the H5N1 variety that can spread to humans, was found during routine checks. No birds were reported sick, it added.

Bird flu is most common during the cool, damp winter. The virus turned up last week in a farm in Hong Kong, leading to the culling of 80,000 birds.

So far this winter, bird flu has killed two people, in Indonesia and Egypt, and made two people ill in Indonesia and Cambodia.

International, Poultry (Reuters, December 17): Cambodia began culling poultry near its capital on Wednesday, officials said, five days after a young man from the area was confirmed with H5N1 bird flu by the World Health Organization (WHO) and the government.

Agriculture Minister Chan Sarun told Reuters on Wednesday he had ordered a three-month ban on poultry transportation from the province of Kandal, 50 km (30 miles) south of Phnom Penh, after tests confirmed it was hit by the deadly virus.

The Health Ministry said in a statement last week the 19-year-old man, the eighth person in Cambodia to have contracted bird flu since its first case in 2005, was in stable condition in the capital's Calmette

hospital.

The patient fell ill on Nov. 28 but was only confirmed as having bird flu on Dec 11, a Health Ministry-WHO statement said.

All seven of Cambodia's previous human cases have died.

Chan Sarun said ministry officials were also investigating in the province of Kampong Speu, 60 km west of Kandal, after reports of dead chickens and ducks.

Since H5N1 resurfaced in Asia in 2003 it has killed more than 200 people in a dozen countries, according to the WHO.

Experts fear the constantly mutating H5N1 virus could change into a form easily transmitted from person to person and potentially kill millions worldwide.

Michigan Wild Bird Surveillance (USDA, as of December 18): For the 2008 testing season, 2166 Michigan samples have been taken so far, comprised of 327 live birds, 1282 hunter-killed birds, 32 morbidity or mortality samples and 525 environmental samples.

H5N1 subtype H5N1 has not been recovered from any Michigan samples tested to date, or from the 73,882 birds or environmental samples tested nationwide for the 2008 testing season, which will run from April 1, 2008 - March 31, 2009. For more information, visit the National H5N1 Early Detection Data System website at <http://wildlifedisease.nbio.gov/ai/>.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

Please contact Susan Vagasky at VagaskyS@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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Table 1. H5N1 Influenza in Poultry (Outbreaks up to December 12, 2008)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 12/15/08)

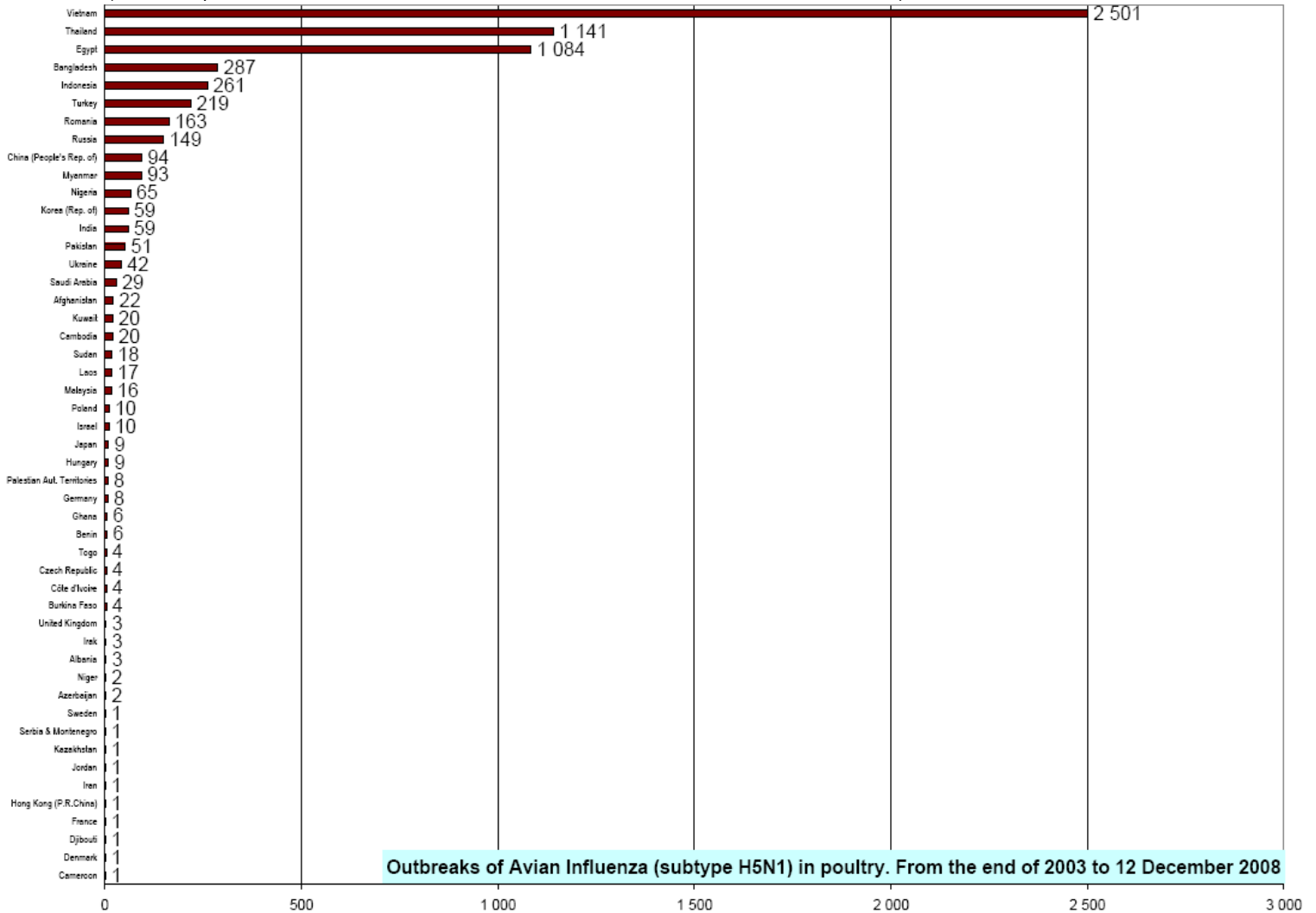


Table 2. H5N1 Influenza in Humans (Cases up to December 16, 2008)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2008_12_16/en/index.html Downloaded 12/16/2008)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	8	7
China	1	1	0	0	8	5	13	8	5	3	3	3	30	20
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	51	23
Indonesia	0	0	0	0	20	13	55	45	42	37	22	18	139	113
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	3	2
Lao PDR	0	0	0	0	0	0	0	0	2	2	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	5	5	106	52
Total	4	4	46	32	98	43	115	79	88	59	40	30	391	247